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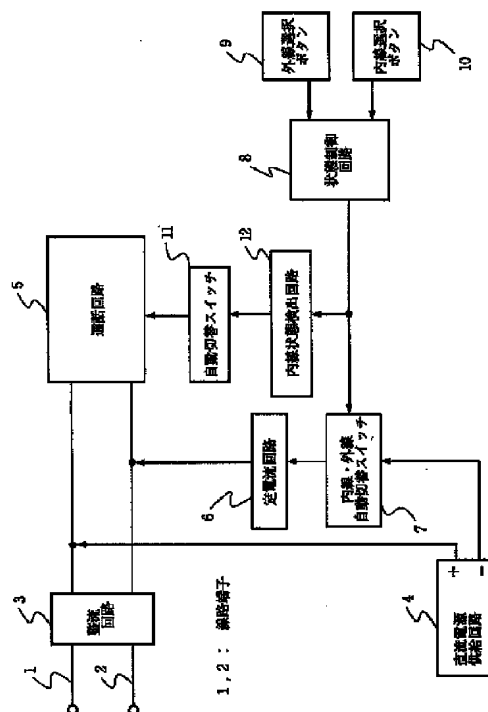
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(54) 【発明の名称】 ボタン電話機

(57) 【要約】

【目的】 内線通話品質を外線の通話品質と同等にする。

【構成】 外線との通話時には、外線選択ボタン9が押下されると、状態制御回路8の出力端子はローレベルを出力し、内線・外線自動切替スイッチ7はオフ状態となり、直流電源供給回路4から通話回路5への電流供給は行われず、局側から線路端子1および線路端子2と、整流回路3とを経て電流供給される。内線通話時には、内線選択ボタン10が押下されると、状態制御回路8の出力端子はハイレベルとなり、内線・外線自動切替スイッチ7はオン状態となり、直流電源供給回路4から通話回路5への電源供給が行われ、同じボタン電話主装置にマルチドロップ方式で複数接続された他のボタン電話機との内線通話が可能となる。このとき、局側からの供給はボタン電話主装置側にてカットされている。同時に内線状態出力回路12は状態制御回路8の出力のハイレベルを検出し自動切替スイッチ11を動作させる。自動切替スイッチ11は、通話回路5の持つ3dBパッド端子をオンさせ通話回路5を内線通話状態に設定する。



## 【特許請求の範囲】

【請求項1】 アナログ小容量のボタン電話主装置にマルチドロップ方式にて接続し、外線を選択する外線選択ボタンと、内線を選択する内線選択ボタンと、前記外線選択ボタンまたは前記内線選択ボタンの押下によって状態信号を送出する状態制御回路と、この状態制御回路からの前記内線選択ボタンが押下されたことを示す内線選択状態信号を受信したときのみ直流供給回路から通話回路へ直流電流を供給する電流切替スイッチとを備えるボタン電話機において、前記通話回路は予め定められた利得減衰器への接続端子を持ち、且つ、前記状態制御回路から前記内線選択状態信号を出力したことを検出する内線状態検出回路と、この内線状態検出回路からの制御信号によって前記通話回路を前記利得減衰器への接続端子に接続させる切替スイッチとを有することを特徴とするボタン電話機。

## 【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明はボタン電話機に関し、特にアナログ小容量のボタン電話主装置にマルチドロップ方式にて接続したボタン電話機に関する。

【0002】

【従来の技術】従来、この種のボタン電話機は、押下された外線または外線選択ボタンに対応した状態制御回路からの制御信号により外線・外線自動切替スイッチを制御するように構成され、通話回路は外線通話時、外線通話時とともに同一の回路を使用する構成となっていた。

【0003】次に従来のボタン電話機において図面を参照して説明する。

【0004】図2は従来のボタン電話器の一例を示すブロック図である。

【0005】図2において、本従来例のボタン電話機は、ボタン電話主装置（図示省略）への回線に接続する線路端子1および線路端子2と、ボタン電話主装置からの電流を整流する整流回路3と、本従来例のボタン電話機へ直流電流を供給する直流電源供給回路4と、外線を選択する外線選択ボタン9と、内線を選択する内線選択ボタン10と、外線選択ボタン9または内線選択ボタン10の押下によって状態信号を出力する状態制御回路8と、送受話の通話回路5aと、状態制御回路8からの状態信号によって直流電源供給回路4からの通話回路5aへの直流電流の供給を切替える外線・外線自動切替スイッチ7と、直流電源供給回路4からの直流電流を定電流化して通話回路5aへ供給する定電流回路6とを有して構成している。

【0006】次に、本従来例の動作について説明する。

【0007】外線との通話時には、外線選択ボタン9が押下されると、状態制御回路8の出力端子は、ローレベルを出力し、外線・外線自動切替スイッチ7はオフ状態となり、直流電源供給回路4から通話回路5aへの電流

供給は行われず、局側からの線路端子1および線路端子2と、整流回路3とを経て電流供給される。

【0008】内線通話時には、内線選択ボタン10が押下されると、状態制御回路8の出力端子はハイレベルとなり、外線・外線自動切替スイッチ7をオン状態とさせ、直流電源供給回路4から通話回路5aへ電流供給が行われ、複数接続された他のボタン電話機との内線通話が可能となる。このとき局線からの供給はボタン電話主装置側にてカットされている。

【0009】

【発明が解決しようとする課題】上述した従来のボタン電話機は、内線通話時と外線通話時の通話回路に同一回路を使用しており、外線通話時における線路距離の遠近、また接続されるボタン電話機の数の大小、及び内線通話時の供給電流は少ないわりに通話パスは身近かいという要因を考慮すると、通話回路からみたインピーダンスの振れ幅が大きく、側音バランスがくずれ、すべてに最適な通話品質を確保することは極めて困難であるという問題点がある。このため、従来のボタン電話機のほとんどの回路構成は、外線通話の品質を優先させており、内線通話の品質は十分に確保できないという欠点を持っている。

【0010】

【課題を解決するための手段】本発明のボタン電話機は、アナログ小容量のボタン電話主装置にマルチドロップ方式にて接続し、外線を選択する外線選択ボタンと、内線を選択する内線選択ボタンと、前記外線選択ボタンまたは前記内線選択ボタンの押下によって状態信号を送出する状態制御回路と、この状態制御回路からの前記内線選択ボタンが押下されたことを示す内線選択状態信号を受信したときのみ直流供給回路から通話回路へ直流電流を供給する電流切替スイッチとを備えるボタン電話機において、前記通話回路は予め定められた利得減衰器への接続端子を持ち、且つ、前記状態制御回路から前記内線選択状態信号を出力したことを検出する内線状態検出回路と、この内線状態検出回路からの制御信号によって前記通話回路を前記利得減衰器への接続端子に接続させる切替スイッチとを有している。

【0011】

【実施例】次に、本発明について図面を参照して説明する。

【0012】図1は本発明の一実施例を示すブロック図である。

【0013】図1において、本実施例のボタン電話機は図2に示す従来のボタン電話機と同じ構成要件には同じ番号が付与されており、異なる点は、従来例における通話回路5aに対し3dBパッド端子を持つ通話回路5と、状態制御回路8の出力がハイレベルとなって外線が選択されたことを検出する内線状態検出回路12と、内線状態検出回路12からの制御信号によって通話回路5

を3dBパッド端子に接続させて通話回路5を内線通話状態に設定する自動切替スイッチ11とを有して構成している。

【0014】次に、本実施例の動作について説明する。

【0015】外線との通話時には、外線選択ボタン9が押下されると、状態制御回路8の出力端子はローレベルを出力し、内線・外線自動切替スイッチ7はオフ状態となり、直流電源供給回路4から通話回路5への電流供給は行われず、局側からの線路端子1および線路端子2と、整流回路3とを経て電流供給される。

【0016】内線通話時には、内線選択ボタン10が押下されると、状態制御回路8の出力端子はハイレベルとなり、内線・外線自動切替スイッチ7はオン状態となり、直流電源供給回路4から通話回路5への電流供給が行われ、同じボタン電話主装置にマルチドロップ方式で複数接続された他のボタン電話機との内線通話が可能となる。このとき、局側からの供給はボタン電話主装置側にてカットされている。

【0017】同時に、内線状態検出回路12は、状態制御回路8の出力ハイレベルを検出し、自動切替スイッチ11を動作させる。自動切替スイッチ11は、通話回路5の持つ3dBパッド端子をオンさせ通話回路5を内線通話状態に設定する。

【0018】

【発明の効果】以上説明したように本発明は、アナログ小容量のボタン電話主装置にマルチドロップ方式にて接続し、外線を選択する外線選択ボタンと、内線を選択する内線選択ボタンと、外線選択ボタンまたは内線選択ボタンの押下によって状態信号を送出する状態制御回路

と、この状態制御回路からの内線選択ボタンが押下されたことを示す内線選択状態信号を受信したときのみ直流供給回路から通話回路へ直流電流供給する電流切替スイッチとを備えるボタン電話機において、通話回路は予め定められた利得減衰器への接続端子を持ち、且つ、状態制御回路から内線選択状態信号を出力したことを検出する内線状態検出回路と、この内線状態検出回路からの制御信号によって通話回路を利得減衰器への接続端子に接続させる切替スイッチとを有することにより、内線選択時に切替スイッチが通話回路を利得減衰器に接続されるので、内線通話の品質を外線通話品質と同等に確保することができる効果がある。

【図面の簡単な説明】

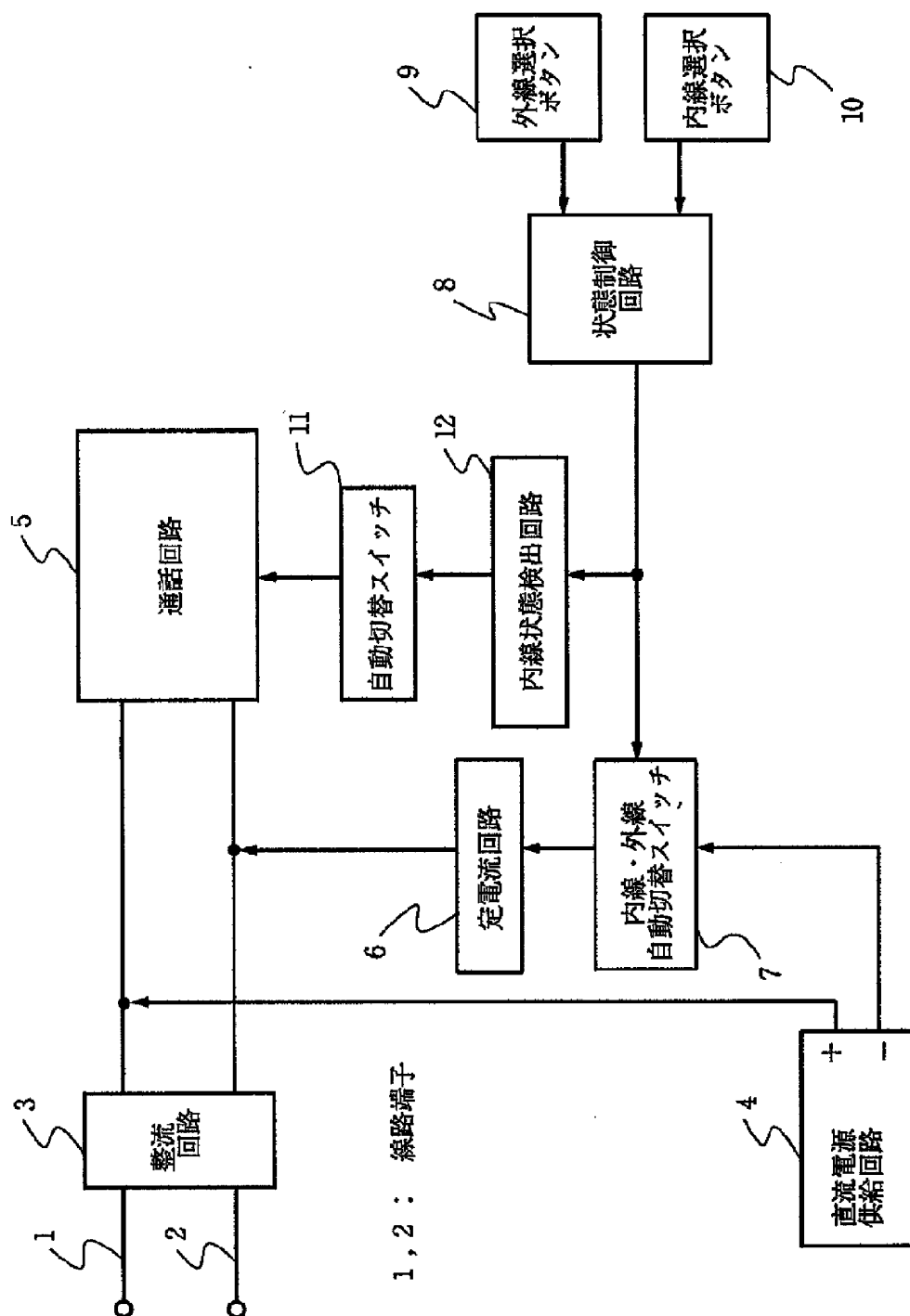
【図1】本発明の一実施例を示すブロック図である。

【図2】従来のボタン電話機の一例を示すブロック図である。

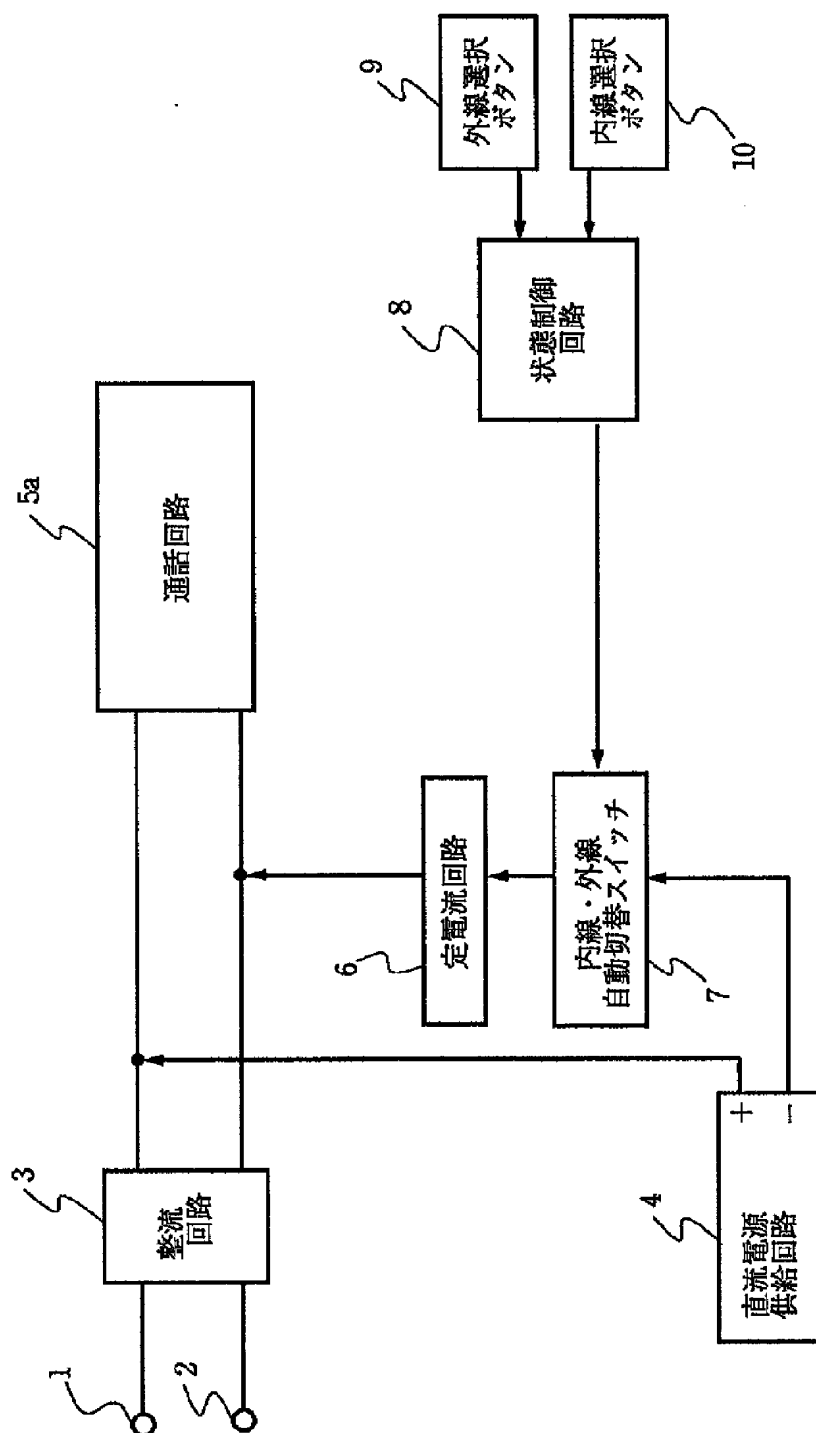
【符号の説明】

- 1 線路端子
- 2 線路端子
- 3 整流回路
- 4 直流電源供給回路
- 5, 5a 通話回路
- 6 定電流回路
- 7 内線・外線自動切替スイッチ
- 8 状態制御回路
- 9 外線選択ボタン
- 10 内線選択ボタン
- 11 自動切替スイッチ
- 12 内線状態検出回路

【図1】



【図2】



# PATENT ABSTRACTS OF JAPAN

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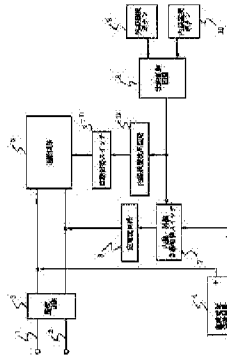
NEC SHIZUOKA LTD

(22)Date of filing : 01.07.1991 (72)Inventor : MUNAKATA KENJI

NAGATA ATSUSHI

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(54) PUSHBUTTON TELEPHONE SET



(57)Abstract:

**PURPOSE:** To make the extension talking quality equal to the talking quality of an external line.

**CONSTITUTION:** When an external line selection button 9 is depressed at talking with an external line, a low level is outputted to an output terminal of a state control circuit 8, an extension external line automatic changeover switch 7

is turned off, no current is supplied from a DC power supply circuit 4 to a speech circuit 5 and the current is supplied from a station side via line terminals 1, 2 and a rectifier circuit 3. When an extension selection button 10 is depressed at the extension talking, the output terminal of the state control circuit 8 goes to a high level and the extension external line automatic changeover switch 7 is turned on, power is supplied from a DC power supply circuit 4 to the speech circuit 5 and the extension talking with plural other pushbutton telephone sets connecting to the same pushbutton telephone master set in multi-drop system is attained. In this case, an extension state output circuit 12 detects a high level of the output of the state control circuit 8 to activate an automatic changeover switch 11. The automatic changeover switch 11 activates a 3dB pad terminal of the speech circuit 5 to set the speech circuit 5 into the extension speech state.

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## LEGAL STATUS

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rejection or application converted  
registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's  
decision of rejection]

[Date of requesting appeal against  
examiner's decision of rejection]

[Date of extinction of right]

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## CLAIMS

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[Claim(s)]

[Claim 1] The line wire selection carbon button which connects with the key telephone system main unit of analog smallness capacity with a multi-drop, and chooses a line wire, The state control circuit which sends out a condition signal by the depression of the extension selection carbon button which chooses an extension, and a said line wire selection carbon button or said extension selection carbon button, In a key telephone system machine equipped with the current circuit changing switch which supplies a direct current to a speaking circuit from a direct-current supply circuit only when the extension selection condition signal which shows that said extension selection carbon button from this state control circuit was pushed is received said speaking circuit -- beforehand -- laws -- \*\*\*\*\* -- an attenuator -- having had a connection terminal and having outputted said extension selection condition signal from said state control circuit with the extension condition detector to detect The key telephone system machine characterized by having the circuit changing switch made to connect said speaking circuit to the connection terminal to said gain attenuator with the control signal from this extension condition detector.

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[Translation done.]

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Industrial Application] Especially this invention relates to the key telephone system machine connected to the key telephone system main unit of analog smallness capacity with the multi-drop about a key telephone system machine.

[0002]

[Description of the Prior Art] Conventionally, this kind of key telephone system machine was constituted so that an extension and a line wire automatic circuit changing switch might be controlled by the control signal from the state control circuit corresponding to the pushed extension or line wire selection carbon button, and the speaking circuit had become the configuration which uses the same circuit with the time of a line wire message at the time of an extension message.

[0003] Next, in the conventional Botha telephone, it explains with reference to a drawing.

[0004] Drawing 2 is the block diagram showing an example of the conventional key telephone system machine.

[0005] The track terminal 1 and the track terminal 2 which connect the key telephone system machine of this conventional example to the circuit to the key

telephone system main unit (illustration abbreviation) in drawing 2 , The rectifier circuit 3 which rectifies the current from the key telephone system main unit, and the DC-power-supply supply circuit 4 which supplies a direct current to the key telephone system machine of this conventional example, The line wire selection carbon button 9 which chooses a line wire, and the extension selection carbon button 10 which chooses an extension, The state control circuit 8 which outputs a condition signal by the depression of line wire selection Botha 9 or the extension selection carbon button 10, Speaking circuit 5a of the transmission-and-reception talk, and the extension and line wire automatic circuit changing switch 7 which change supply of a direct current to speaking circuit 5a from the DC-power-supply supply circuit 4 with the condition signal from the state control circuit 8, The current regulator circuit 6 which constant-current-izes a direct current from the DC-power-supply supply circuit 4, and is supplied to speaking circuit 5a is had and constituted.

[0006] Next, actuation of this conventional example is explained.

[0007] At the time of the message with a line wire, if the line wire selection carbon button 9 is pushed, the output terminal of the state control circuit 8 will output a low level, an extension and the line wire automatic circuit changing switch 7 will be in an OFF state, the current supply source from the DC-power-supply supply circuit 4 to speaking circuit 5a will not be performed, but a current supply source will be carried out through the track terminal 1 from a station side and the track terminal 2, and a rectifier circuit 3.

[0008] At the time of an extension message, if the extension selection carbon button 10 is pushed, it will become high-level, and the output terminal of the state control circuit 8 makes an ON state an extension and the line wire automatic circuit changing switch 7, a current supply source will be performed from the DC-power-supply supply circuit 4 to speaking circuit 5a, and the extension message with other key telephone system machines by which two or more connection was made of it will be attained. At this time, the supply from a main wire is cut in the key telephone system main unit side.

[0009]

[Problem(s) to be Solved by the Invention] The conventional key telephone system machine mentioned above is using the same circuit for the speaking circuit at the time of an extension message and a line wire message. If a talk path takes the factor of a familiar paddle into consideration comparatively [ few ], the distance of the track distance acquired at the time of a line wire message, a number of a key telephone system machine of size connected, and the supply current at the time of an extension message The deflection width of face of the impedance seen from the speaking circuit is large, sidetone balance collapses, and securing the optimal speech quality for all has the trouble of being very difficult. For this reason, almost all the circuitry of the conventional key telephone system machine is giving priority to the quality of a line wire message, and the quality of an extension message has the fault that it is not fully securable.

[0010]

[Means for Solving the Problem] The line wire selection carbon button which connects the key telephone system machine of this invention to the key telephone system main unit of analog smallness capacity with a multi-drop, and chooses a line wire, The state control circuit which sends out a condition signal by the depression of the extension selection carbon button which chooses an extension, and a said line wire selection carbon button or said extension selection carbon button, In a key telephone system machine equipped with the current circuit changing switch which supplies a direct current to a speaking circuit from a direct-current supply circuit only when the extension selection condition signal which shows that said extension selection carbon button from this state control circuit was pushed is received said speaking circuit -- beforehand -- laws -- \*\*\*\*\* -- an attenuator -- having had a connection terminal and having outputted said extension selection condition signal from said state control circuit with the extension condition detector to detect It has the circuit changing switch made to connect said speaking circuit to the connection terminal to said gain attenuator with the control signal from this extension condition

detector.

[0011]

[Example] Next, this invention is explained with reference to a drawing.

[0012] Drawing 1 is the block diagram showing one example of this invention.

[0013] A point which the key telephone system machine of this example is given to the same configuration business as the conventional key telephone system machine shown in drawing 2 in the same number in drawing 1 , and is different. The speaking circuit 5 which has 3dB pad terminal to speaking circuit 5a in the conventional example, The extension condition detector 12 which detects that the output of the state control circuit 8 became high-level, and the extension was chosen, The automatic circuit changing switch 11 which is made to connect a speaking circuit 5 to 3dB pad terminal, and sets a speaking circuit 5 as an extension talk state with the control signal from the extension condition detector 12 is had and constituted.

[0014] Next, actuation of this example is explained.

[0015] At the time of the message with a line wire, if the line wire selection carbon button 9 is pushed, the output terminal of the state control circuit 8 will output a low level, an extension and the line wire automatic circuit changing switch 7 will be in an OFF state, the current supply source from the DC-power-supply supply circuit 4 to a speaking circuit 5 will not be performed, but a current supply source will be carried out through the track terminal 1 from a station side and the track terminal 2, and a rectifier circuit 3.

[0016] At the time of an extension message, if the extension selection carbon button 10 is pushed, the output terminal of the state control circuit 8 will become high-level, an extension and the line wire automatic circuit changing switch 7 will be in an ON state, the current supply source from the DC-power-supply supply circuit 4 to a speaking circuit 5 will be performed, and the extension message with other key telephone system machines by which two or more connection was made with the multi-drop at the same key telephone system main unit of it will be attained. At this time, the supply from a station side is cut in the key telephone

system main unit side.

[0017] To coincidence, the extension condition detector 12 detects the output high level of the state control circuit 8, and operates the automatic circuit changing switch 11 to it. The automatic circuit changing switch 11 makes 3dB pad terminal which a speaking circuit 5 has turn on, and sets a speaking circuit 5 as an extension talk state.

[0018]

[Effect of the Invention] The line wire selection carbon button which connects this invention to the key telephone system main unit of analog smallness capacity with a multi-drop as explained above, and chooses a line wire, The state control circuit which sends out a condition signal by the depression of the extension selection carbon button which chooses an extension, and a line wire selection carbon button or an extension selection carbon button, In a key telephone system machine equipped with the current circuit changing switch which carries out direct-current supply from a direct-current supply circuit to a speaking circuit only when the extension selection condition signal which shows that extension selection Botha from this state control circuit was pushed is received The extension condition detector which detects the speaking circuit having had a connection terminal to the gain attenuator defined beforehand, and having outputted the extension selection condition signal from the state control circuit, Since a speaking circuit is connected to a gain attenuator in a circuit changing switch at the time of extension selection by having the circuit changing switch made to connect a speaking circuit to the connection terminal to a gain attenuator with the control signal from this extension condition detector It is effective in the quality of an extension message being securable on a par with a line wire speech quality.

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[Translation done.]

\* NOTICES \*

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- 3.In the drawings, any words are not translated.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing one example of this invention.

[Drawing 2] It is the block diagram showing an example of the conventional key telephone system machine.

[Description of Notations]

- 1 Track Terminal
- 2 Track Terminal
- 3 Rectifier Circuit
- 4 DC-Power-Supply Supply Circuit
- 5 5a Speaking circuit
- 6 Current Regulator Circuit
- 7 Extension and Line Wire Automatic Circuit Changing Switch
- 8 State Control Circuit
- 9 Line Wire Selection Carbon Button
- 10 Extension Selection Carbon Button
- 11 Automatic Circuit Changing Switch
- 12 Extension Condition Detector

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[Translation done.]

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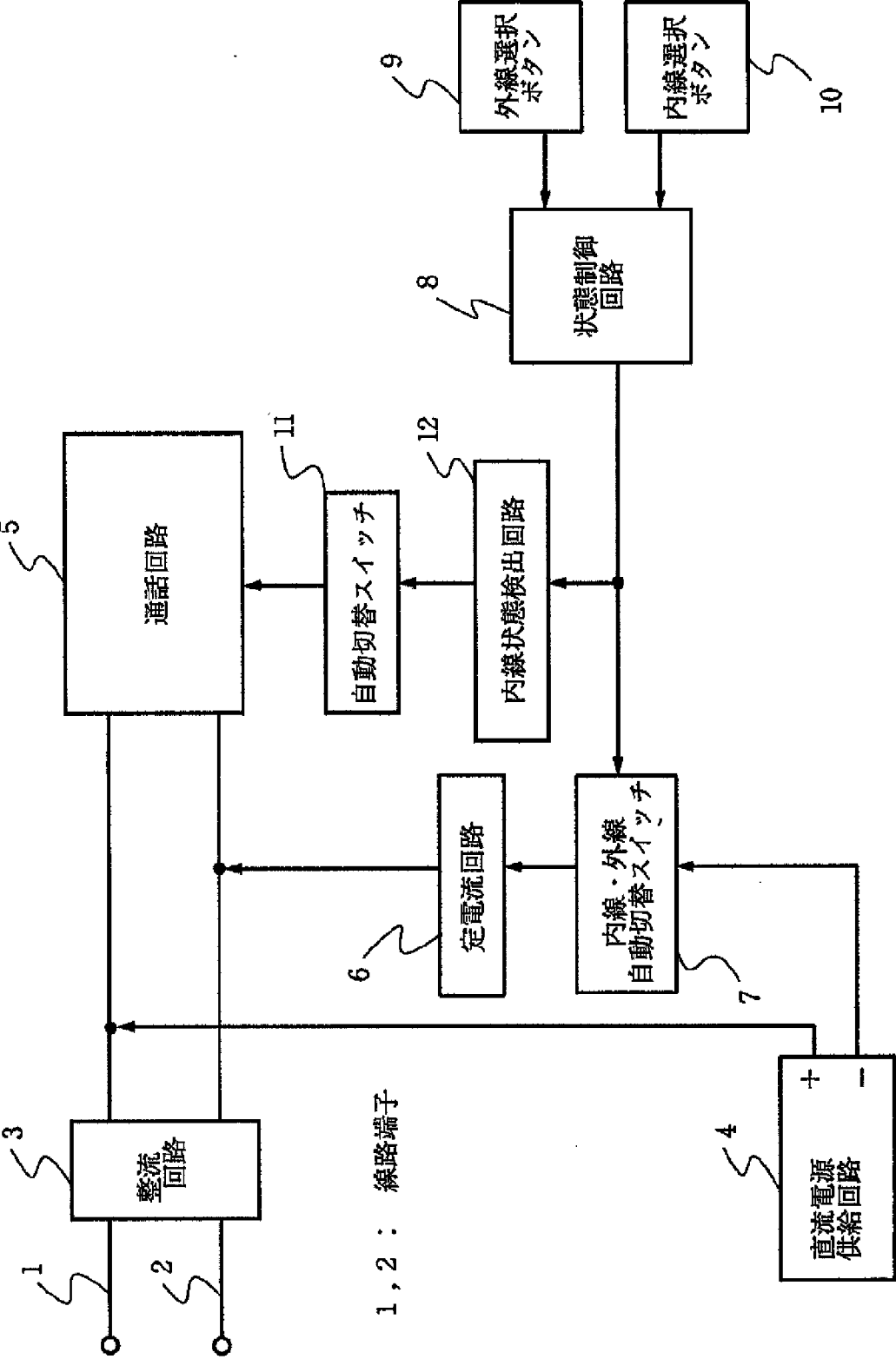
3.In the drawings, any words are not translated.

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**DRAWINGS**

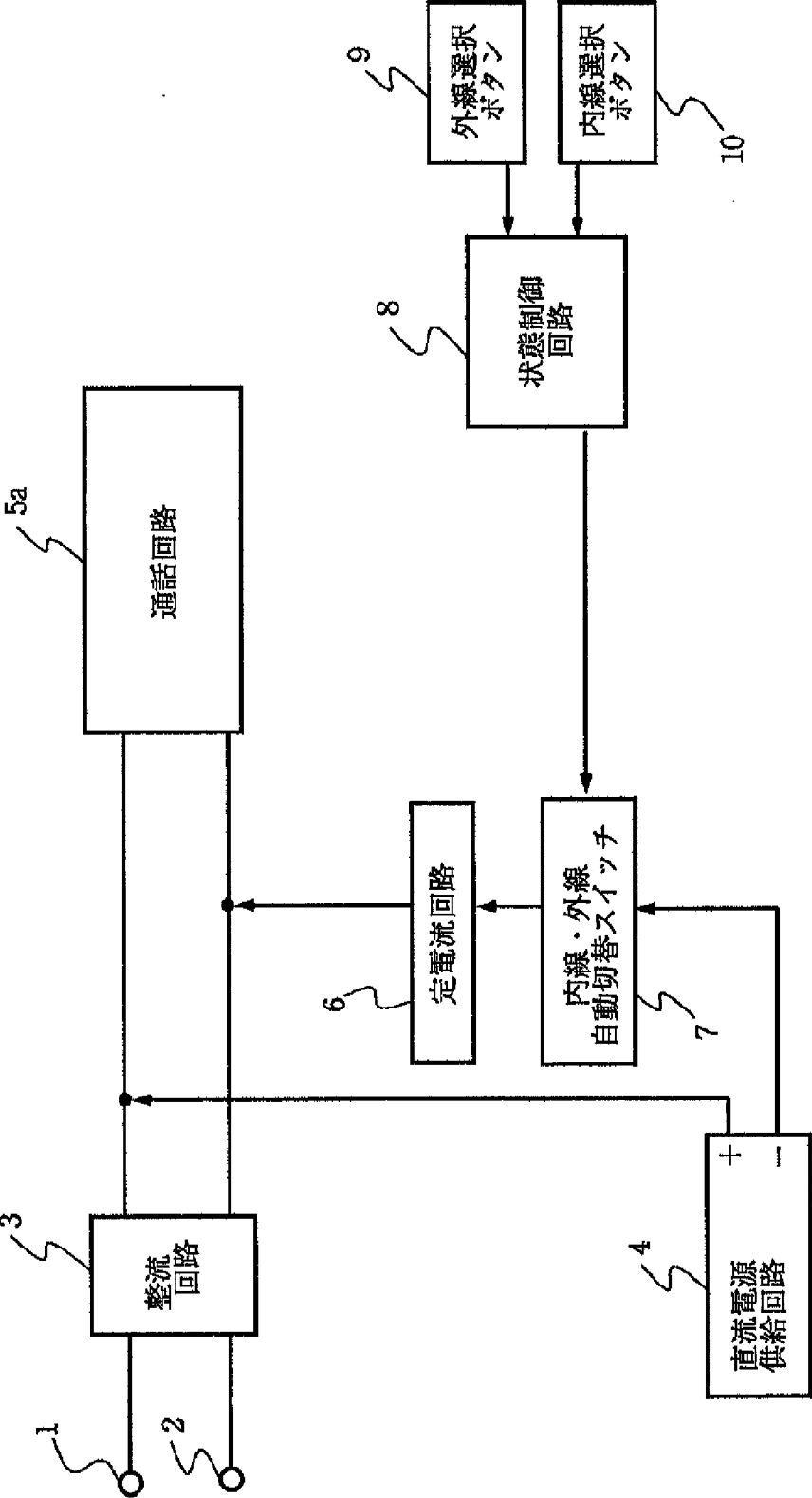
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[Drawing 1]





[Drawing 2]



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[Translation done.]